

# The National Association of Corporation Schools

## Bulletin

Published by Order of the Executive Committee

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### FOREWORD

Our Association, having reached that stage in its development where it seems desirable to issue a monthly bulletin, the Executive Committee meeting in New York City on February 26th unanimously adopted the following resolution:

"That a sufficient amount of funds be set aside to provide for the publication of a monthly bulletin to be the official organ of the Association; to be published by the Secretary's office and edited by the Assistant Secretary, until further instructions from the Executive Committee."

Complying with the above resolution, this, the initial number, makes its appearance and the bulletin will continue to be published and mailed to all members on or about the first of each month.

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### COOPERATION SOLICITED

It is the plan of the General Educational Committee to have most of the papers which will be given at the second annual convention in Philadelphia prepared by members of our Association. Certainly there are none better qualified to speak with authority. Any members who have made a special study of any subject falling within the scope of the work of this Association and who are willing to prepare a paper or report on the subject will please communicate with Mr. E. St. Elmo Lewis, Chairman of the General Educational Committee, as such cooperation will be welcomed. It is not, of course, possible to cover in a four days' session all of the activities of the Association, but data of this kind can be used either during the convention or published in the bulletin.

### LOCAL COMMITTEE ON ARRANGEMENTS

Mr. E. C. Wolf, Chairman of the Local Committee on Arrangements for the second annual convention to be held in Philadelphia in June, has perfected the organization of his Committee, which is divided into six sub-divisions as follows:

#### *Educational Exhibits*

E. C. WOLF, *General Chairman*

MR. J. H. HANCOCK, *Chairman*.....The Curtis Pub. Co.  
MR. A. J. ROWLAND.....Drexel Institute.  
MR. J. H. YODER.....Pennsylvania R. R.  
MISS HARRIET R. FOX.....Strawbridge & Clothier.

#### *Hotel Accommodations*

MR. HARRY WIGO, *Chairman*.....The Curtis Pub. Co.  
MR. JOHN JACKSON.....Strawbridge & Clothier.

#### *Reception and Entertainment*

MR. R. C. BLANCHARD, *Chairman*.....The Curtis Pub. Co.  
MR. WILLIAM C. ASH.....Phila. Trades School.  
MR. JOSEPH H. HAINES.....Haines, Jones & Cadbury.  
MISS HELEN SNOW.....The Curtis Pub. Co.  
MISS ALICE M. BLAINE.....The Curtis Pub. Co.  
MISS KATHARINE HUEY.....The Curtis Pub. Co.

#### *Transportation*

MR. L. A. MILLER, *Chairman*.....The Curtis Pub. Co.  
MR. D. M. BECKER.....Pennsylvania R. R.

#### *Publicity*

MR. W. E. WALTER, *Chairman*.....The Curtis Pub. Co.  
MR. WM. H. MEARNs.....School of Pedagogy.

#### *Convention Daily*

MR. R. C. CLOTHIER, *Chairman*.....The Curtis Pub. Co.  
MR. WILLIAM H. MEARNs.....School of Pedagogy.  
MISS ALICE M. BLAINE.....The Curtis Pub. Co.  
MISS KATHARINE HUEY.....The Curtis Pub. Co.

## REPORT OF SUB-COMMITTEE ON MANUFACTURING AND TRANSPORTATION\*

By MARK B. HUGHES, Chairman

[Mr. Mark B. Hughes, Chairman of the Sub-committee on Manufacturing and Transportation of The National Association of Corporation Schools, is at present, and has been since 1907, Supervisor of the Cadillac School of Applied Mechanics, which is conducted by the Cadillac Motor Car Co. of Detroit, Mich.]

Mr. Hughes was born in Ravenna, Ohio, October 16, 1880, and graduated from the Ravenna public schools. He then worked for the John F. Buyer Machine Co. for a short time on steam engine work, but realizing that the advantages of some of the apprenticeship schools connected with the larger institutions of the country were much greater than those of the Buyer Co., he enrolled for a four-year apprenticeship course with the Warner & Swasey Co. of Cleveland, Ohio, in 1899. During the five years of his connection with this company, he acquired considerable knowledge regarding machine tool manufacturing and astronomical instrument making. At the same time that Mr. Hughes began his apprenticeship course, he enrolled for a mechanical engineer's course with the International Correspondence Schools of Scranton, Pa., and since completing the course has been an enthusiastic supporter of this system of correspondence instruction.

Mr. Hughes was connected with the Dean Electric Co. of Elyria, Ohio, and the Burroughs Adding Machine Co. of Detroit, Mich., as tool and die maker, and was instrumental in developing the power adding attachments for the Bankers Adding Machine Co., Cleveland, Ohio. He later had charge of the designing department of this concern.

In January, 1906, he entered the engineering department of the Cadillac Motor Car Company, and in May, 1907, was placed in charge of the organization of their school, which position he has since retained.]

Your committee appointed to investigate and suggest methods for teaching manufacturing and transportation have, through the courtesy of the Cadillac Motor Car Company, of Detroit, Mich., been able to secure lantern slides illustrating conditions existing in twenty-one different shops and trade schools throughout New England and have arranged to give their report in connection with these.

The report of this committee is necessarily rather incomplete, owing partly to the lateness of their appointment, and partly to the fact that, of 650 manufacturers written to, only 100 have as yet answered, and of this number only 50 have given a description of their apprentice course.

We will give a short description, illustrated with the slides, of 21 manufacturing and railroad shops, and then a synopsis of all the conditions as far as reported, showing the average conditions in the shops.

Three State Trade Schools were visited, and as these should not properly be included in the manufacturing and railroad shops, they will be described first.

This slide shows the State Trade Education Shop at New Britain, Conn.

\* This report was submitted to the first annual convention of The National Association of Corporation Schools held at Dayton, Ohio, September 16-19, 1913, and will appear in the proceedings of that convention.

This school was organized in 1910, and at the present time has 140 students enrolled, and to June 30, 1913, the number of graduates was 15.

Seven per cent of all those taken on trial graduate and seven trades are taught. The courses require two years to complete, and a trial period of three months is required of all applicants.

No cash prizes are given, but a set of tools is awarded to each graduate. The same instructors teach both shop practice and mathematics, and the amount expended in equipment is \$1,500.

Applicants fourteen years of age who understand fractions are eligible to enrollment.

This slide shows the Bridgeport Trade School of Bridgeport, Conn., which had approximately 560 enrollments in 1912, and at present has instructed approximately 1,000 students.

At the present time there are 166 regular day students.

The school has been in operation for three years, and the majority of the boys who enter the regular course graduate.

The course requires 4,800 hours to complete, and the school employs 8 male and 3 female instructors.

The machine-shop equipment comprises 50 machines; the carpenter shop 7 machines and the printing shop 4 presses.

The only requirement for admission is that the students be fourteen years of age.

Many of the shops of Bridgeport send their boys to the Bridgeport Trade School for class instruction one half day each week, and, in the majority of cases, students are paid for this time.

The Locomobile Company and the Bullard Machine Tool Company also have a certain number of special apprentices taking part instruction in the Trade School.

Where the students prefer to serve their entire apprenticeship in the school, one quarter of the time is devoted to class work and three quarters to machine operation and trade instruction. No text books are used and lesson sheets prepared by the instructors are used exclusively.

This Trade School combines the Part-time, Continuation, Co-operative High School, and all day Trade School plan. The instructors in the carpenter shop, pattern-making and printing shops teach both shop and class work. The machine shop, however, has a separate instructor for shop work and for mathematics and drawing.



A very good class of work is turned out by the Trade School, and many shops send in parts to be made, which helps materially in meeting the expenses of the school. Several engine lathes are at the present time under construction.

The next slide shows the Trade School at Worcester, Mass.

This school has an attendance of 225 day pupils and 500 night pupils. The instructors, all of whom are practical mechanics, are 18 in number. The school management much prefers practical teachers in the place of technical men for mechanical instructors.

The drawing classes are taught by technical graduates, however.

The State pays one half of the running expenses of the school and the city furnishes the building and equipment. Part of the expense of the present building was defrayed by a contribution from a Worcester citizen.

No tuition fee is charged and no wages are paid the students.

Applicants fourteen years of age or over are eligible to day class work.

Of those enrolled about 50 per cent graduate, and most of these receive good wages upon leaving the school. The school instructors compile their own lesson sheets and use no text books.

Both Part-time and Continuation work are done, and the school has a very elaborate equipment, including machine tools, gas and steam engines, and one or two automobiles. One steam engine company furnished castings for a 100 H. P. engine, which the students have nearly completed.

The impression given to a man accustomed to manufacturing shop conditions upon entering the average Trade School is that insufficient discipline is maintained. This is probably due to the fact that the students do not receive wages and are generally quite young.

No photographs were obtained from the Fitchburg Part-time School, which is carried on in connection with the Simonds Saw Works and other shops in the city. The plan in operation there is to take high-school students who have completed one year of their school work into some shop for the summer vacation. In the fall when school starts the boys are alternated, working one week in the shop and going one week to school, and are taken in pairs, so that while one boy is in the shop the other is in the school.

Each Saturday at 11 o'clock the boy who has been at school that week goes into the shop and learns on what particular job his alternate has been working and how it has been handled, in order that the work may be taken up without delay the next Monday morning.

The Simonds Saw Company at the present time with a total working force of 400, employ 18 of the students. The Fitchburg people are apparently well pleased with their plan of schooling, and believe that three hours a week of class work is far too little and does not give the boy the proper opportunity.

The next slide shows a bird's eye view of the United Shoe Machinery Company's plant at Beverly, Mass. This plant without doubt presented the finest example of ideal working conditions of any plant visited.

The workmens' club, the gymnasium, hospital rooms, restaurant and surrounding country all help to make this an ideal shop.

The half-time system of instruction as carried on here admits boys of from fourteen to eighteen years of age to the Beverly Industrial School.

The boys alternate each week between school and shop work in pairs similar to the method used in Fitchburg. The principal difference between the plan of the Shoe Machinery Company and at Fitchburg is that the Shoe Machinery Company have a very extensive machine equipment in their plant devoted entirely to the training of the students.

Their work is of such nature that a student after working one week in the shop can allow his work to remain idle while he is in school the following week and another student takes up another job in the shop.

Instruction in the school includes mathematics, drawing, physics, chemistry, and civics to a certain extent. The total number of students enrolled in the United Shoe Machinery Company at the present time is 76, which means 38 at all times in the shop.

Of all those who enroll 90 per cent graduate from the full course.

Students doing piece work receive one half the regular workman's rate while in the shop. The school is under the direction of 5 members of the Beverly School Board, the Mayor of Beverly and the Assistant Superintendent of the United Shoe Machinery Company. The State reimburses the United Shoe

Machinery Company by one half the amount they raise to maintain the school.

One half the expense of the instruction is borne by the city, also the salary of the director.

The school has been in operation since 1909, and in 1912 graduated 14 students, all of whom are now employed in the factory.

The plan is to start with a certain number of students at the beginning of the school term, and as vacancies occur in the shop new students are enrolled to fill these. All new classes are started July 18th. No trial period is required, no bonus is given and no contract or indenture is used. The three-year course may be shortened approximately six months by a special effort upon the part of the student.

One shop instructor devotes his entire time to the shop work. All work is productive, and lesson sheets and no text-books are used.

The school instruction is from six to seven hours for five days a week, and the regular work day in the shop is ten hours.

Only boys from the City of Beverly have been taken, principally because the city bears considerable of the expense of the school.

The policy of the shop school of the Shoe Machinery Company is to keep the boys away from the journeymen while learning for the first year or two.

One industrial school instructor assists the mechanical instructor in the shop at all times.

Attention is called to the window construction shown in the slide, as it gives excellent ventilation through the shop.

The next slide shows a class in meter reading of the Consolidated Gas Company of New York. No detailed description of their course was given, but they have informed us that they have approximately 200 students now enrolled, 250 graduates in their employ, have enrolled 450 students up to the present time, have 3,000 square feet of floor space devoted to training purposes, and the object of the school is to make what they cannot acquire ready made.

Students are paid wages while attending classes, and written examinations are required from the students.

This slide shows the North End Union School of Printing, Boston, Mass.

At the present time 15 students are enrolled on the course.

A tuition fee of \$100 is required, which, however, may be paid in installments.

Boys sixteen years of age and over are eligible. Lectures on the art of printing and type-making are given by the instructor.

The boys work forty-eight hours per week for one year in school, after which time they are taken into different printing establishments in the city and receive wages. Spelling, mathematics, and drawing are included in the class work. A few outside jobs of printing are done by the students, and some very fine samples of their work were on exhibition.

A few photographs of different school printing-room equipment were sent in, and these will be shown.

The next slide shows a bird's eye view of the Norton Grinding Wheel Company, of Worcester, Mass., which maintains a school for developing Norton representatives and demonstrators. At present 7 young men are enrolled.

Applicants eighteen to twenty years of age are taken, 60 per cent of whom graduate.

Wages of from \$9 to \$12 a week are paid, and \$75 a month is paid upon graduation. Certain class work is carried on by means of text-books and an extensive library.

Students are paid while attending classes, and the construction, manufacturing and operation of grinding wheels is taught.

The students are required to make written reports, which are corrected and returned to them. The shop training included in this course takes in the lathe, planer, drilling, milling, shaping, hardening and tempering, general repairing, assembling and laboratory work.

Instruction on Norton efficiency methods is also given.

The Norton Machine Company, also of Worcester, employ a few machine apprentices, but no class work is given these students.

The next slide shows a view of the factory in New York City of R. Hoe & Company, manufacturers of printing presses and machinery.

They have 175 students enrolled in their apprentice school at the present time, and 95 per cent of all students enrolled graduate from the four-year course. Rates of pay of 6 cents to 19 cents per hour are given students while learning, and a prize consisting of two weeks vacation with pay is given to certain students.

The company provides 28 instructors throughout the shop for the thorough training of the students, and a class room 40 by 40 feet is appropriated for class instruction in mathematics, drawing, etc., for a period of four and a half hours per week. The object of the school is to develop competent men to install printing-press machinery.

The class work is held during the evening, and students are given a free lunch by the company before the evening class work is taken up.

The next slide shows a class of students of the New York Central and Hudson River Railroad. At the present there are approximately 85 students enrolled in all the shops, and from 30 to 50 per cent graduate.

The courses vary from three to four years in length, and instruction in ten different trades is given, although most of the apprentices are taking a machinist course. Classes are conducted and instruction given by means of I. C. S. text-books and lesson sheets written by the school instructors. The supervisor prefers the lesson sheets compiled by the school instructors, but owing to the number of trades taught the use of the I. C. S. sheets has been necessary.

No mechanically equipped class rooms are used in connection with their schools. Instruction in mechanical drawing, sketching, arithmetic, reading drawings, spelling, machine tool operations, tool making and applied mechanics are given.

The next slide was the only one obtainable of the school maintained by the American Locomotive Company, of Schenectady, N. Y.

At the present time approximately 375 machinist students and 72 drafting room students are enrolled in the apprentice courses in the several shops of this company. From 50 to 60 per cent of those enrolled graduate.

One instructor is provided for the Schenectady class and one superintendent oversees several of the shop schools. All courses require four years to complete excepting the electrical repair course, which requires two years.

The school was organized in 1909, and the drawing students receive as high as 22 cents an hour while on the course. They also receive a bonus of \$150 upon completion. No bonus is given the shop students.

Students working piece work receive the full rate and the drawing room students only are paid for class attendance.

No mechanically equipped training room is used in connection with the school. Graduate machinists are paid at the rate of 27½ cents per hour.

All work done by the students is productive.

The State law requires machine-shop students to be seventeen years of age, but if a student works but fifty-hours a week he may commence at the age of sixteen.

All classes are conducted in the shops with the exception of one at Richmond, Pa., conducted in connection with the Mechanics' Institute.

Lesson sheets and no text-books are used.

Students receive two hours a week class work, which is given during the evening. The object of the school is the development of good toolmakers and eventually foremen.

No indenture is used and applicants are plentiful.

In the class work formulas are used as required. Civics and English are not taught as separate subjects. The class work is quite technical, and includes resolution of forces, strength of materials, levers, spring design, etc. Practically one third of all the men in the drawing room are students, and all drawing students are given one year's training in the shop.

Each student has experience in approximately 6 different departments during his four-year course.

This company believes the Apprenticeship or Corporation School is the most desirable method of teaching a trade. They do not, however, favor a mechanically equipped training room.

The instructors employed here are all practical shop men.

Two class rooms, each 20 by 30 feet, are devoted to the class work.

The next slide shows the building in which are taught the apprentices of the Fore River Shipbuilding Company, located at Quincy, Mass.

The entire third floor is devoted to this purpose.

The school was organized in 1906, and at present 175 students are enrolled and 34 per cent of those enrolled graduate.

The course requires four years to complete, and the students receive 9, 11, 14 and 17 cents per hour, with a bonus of \$100 upon its completion. Students working piece work receive 80 per cent of the regular shop rates.

One instructor cares for the entire school, and has other duties which consume from one half to one hour a day.

No mechanically equipped class room is used, although a



great many parts and patterns are used in the drawing-room class.

Two thirds of the students are of foreign-born parents.

This company employs 4,300 men, including the office force. The students receive prizes as follows: One first prize of four weeks deducted from the course; one second prize of three weeks deducted, and one third prize of two weeks deducted. Students are paid approximately 31 cents an hour upon graduation. Applicants sixteen years of age and over are taken, and 19 different trades are taught.

The class work includes mathematics, drawing and lectures on machine-shop practice. A text-book on "Shop Mathematics" is used in the mathematics class. The drawing-room students receive an increased wage, which is \$9 a week the third year, \$11.50 the fourth year and \$15 the fifth year. Five years is required of all drawing-room students. The drawing is taught from lesson sheets entirely.

All students receive four hours per week class work with pay for all time so spent. The object of the course is more efficient mechanics.

The school was organized in 1906, and two of the graduates have been sent abroad as engineers. Several graduates are in charge of work in the yards at Quincy.

The company prefers applicants who do not depend entirely upon the wages they receive for their support, and the supervisor here believes the shop school is the only method by which a trade may be properly taught.

The students receive approximately 7 changes of work during the four-year course. No machine equipment in the class room is possible, owing to the size of the work, battleships being the principal output.

This company takes a few men under instruction on one machine only.

The next slide shows a view of the Brown and Sharpe Manufacturing Company at Providence, R. I., who have an apprentice school, which was established in 1867, and at the present has enrolled 202 students, 147 of which are in the machinist trade. Of those enrolled to date 95 per cent have graduated, and it is claimed by the management that practically all of the executives now in the factory were at one time apprentices in the school.

A trial period of twelve weeks is required of all applicants before they are enrolled and allowed to sign the indenture.

The machinist course requires four years to complete, and a cash deposit of \$50 is required of all applicants before indenturing.

Wages of 8, 10, 12 and 14 cents an hour are paid, and a bonus of \$150 is awarded to all graduates. Students on piece work receive one half of the regular rate, and this feature of the course is considered by the instructor very beneficial to all. One instructor with one assistant manages the entire school, and the building which is devoted to school purposes, as shown in the slide, gives approximately 3,600 square feet of floor space.

Graduate students are paid approximately 25 cents per hour, and applicants must be over sixteen and not be over eighteen years of age. Graduates from the public high schools may have their courses shortened at the discretion of the management. The first- and second-year students receive two hours class work per week; the third- and fourth-year students receive four hours class work per week, and all students receive a change of work approximately every three months while in the shop. The Brown and Sharpe Company do not favor a mechanically equipped training room. Prizes in the way of a wage increase of 2 to 4 cents per hour are given to students if certain standards are obtained in their class work. The supervisor does not determine the class of work the boys shall receive, neither does he instruct them regarding their work after they leave the school class room.

All drawing-room students receive six months shop experience, and up to the present time only one examination has been given the students.

Very few applicants who have not had 8 grades of public-school work are admitted.

A club room for the students is open from 7 to 10 o'clock evenings.

The next slide shows a bird's eye view of the Westinghouse Air Brake Company, of Wilmerding, Pa., which at present has 28 students enrolled.

Of all those enrolled to date 95 per cent graduate, and three graduates are at present holding executive positions.

The time required for machinist apprentices is four years, and wages from 7 to 20 cents per hour, changing every six months, are paid, with a bonus of \$25 at the end of the first year, of \$40 at the end of the second, \$75 at the end of the third and \$100 at the end of the fourth.

Students do not work at piece work, and one supervisor only

is provided. No class or training room is furnished in the shop, but arrangements are made so that students may attend classes for eight hours a week at the Welfare Club in the vicinity, and for time so spent wages are paid.

Students receive approximately 25 cents an hour upon graduation.

The class work covers approximately 19 different subjects, including geometry, trigonometry, etc., and the building in which the Welfare Club meets, valued at \$150,000, was donated by Mr. Westinghouse. The Westinghouse Company also pays the Welfare Club a certain amount for carrying on the class work. No lesson sheets, but text-books entirely are used, and the object of the school is the development of foremen and officials. The supervisor here believes the mechanically equipped training room would be a very fine feature.

A special three-year course is open to a very few of the graduate students, in which pattern-making, blacksmithing, and chemical laboratory work are taken up. The graduates from this course generally receive \$125 a month and are placed in executive positions.

This company has over 300 men who have been in their employ from twenty-one to forty-two years, and these men receive two weeks vacation each year with pay. Approximately 4,500 men are employed here.

The next slide shows the Westinghouse Electric and the Westinghouse Machine Company's plants at East Pittsburg, Pa.

With the Westinghouse Machine Company at the present time 44 students are enrolled, and it is claimed that 99 per cent graduate.

The course for machinists requires four years to complete, and wages of 12, 15, 17½ and 20 cents an hour are paid. Three instructors are provided, and class-room work in mathematics, drawing and shop problems is given to all students. Applicants sixteen to twenty-one years of age are admitted, and students are paid for all time spent in class. The course was started 1888. Several graduates are holding executive positions, and the average rate paid to graduate students is 34 cents an hour. Students on piece work receive one half the regular rate for three years and three fourths the regular rate during the fourth year.

Class work consumes four hours per week, and drawing instructions are included. Two of the instructors devote only half their time to the school work. No mechanically equipped train-

ing room is provided. Applicants must be eighth-grade school graduates, class work is compulsory, and all students are paid for time so spent. Of the technical graduates, 90 per cent obtain positions in the shop before they graduate from the school. Lesson sheets and text-books are used, and the schools close for two months during the summer. Students and journeymen are both guaranteed their day rate while working piece work. The school instruction was started in 1912, although apprentices have been taken for some time. An indenture is used, and the greatest co-operation is obtained from the shop foremen.

The Westinghouse Electric Company operate two courses, one for technical graduates and one for public-school boys who desire to become tradesmen. At the present time there are 350 tradesmen apprentices enrolled, and 70 per cent graduate, also of those graduated during the last years, 70 per cent are now in the employ of the company. The course requires four years to complete, and machinist apprentices are paid 11, 12, 15 and 18 cents an hour, and are allowed to work piece work. One supervisor devotes his entire time to the school, and 17 instructors devote from four to six hours per week.

A mechanically equipped training room is provided. Students receive 25 cents an hour upon graduating, and an increase in three months' time. Practically all the work is premium or piece work.

Applicants sixteen to twenty-one years of age are taken.

The class work, in which simple equations, trigonometry, applied mechanics, show problems, etc., are taken up, consumes four hours each week. No text-books are used, lesson sheets answering the purpose. Students are paid for time spent in class, an indenture is used, and examinations are given the students every four months, and are required to be passed satisfactorily before the students may take up the next subjects.

The next slide shows a bird's eye view of the Yale & Towne Manufacturing Company at Stamford, Conn. This school was organized in 1908, and at the present time 90 students are enrolled, and 33 per cent of those enrolled graduate.

Approximately 8 are now holding executive positions.

The course requires four years to complete, and students receive from 8 to 20 cents an hour, the rate changing every six months, and a bonus of \$100 is given. Students do not work piece work. Three instructors and one supervisor are provided.

A space 57 by 171 feet is devoted to two mechanically equipped training rooms and one class room. Both text-books and lesson sheets are used, and five hours per week is devoted to class work. "Lamb's Elementary Algebra" is used in class, and students are paid while attending. Applicants sixteen years of age and over are taken, and students receive approximately 30 cents an hour upon graduation. The students do an especially good class of work while in the training room. The machine equipment used here is valued at \$25,000. The work consists of milling cutters, broaches, counterbores, and a certain amount of punch and die work. The students are allowed to do all the machine operations on the tool they are making, or carry the tool through from the start. Special emphasis is placed on the fact that the students are separated for the first three years from the journeymen while in the shop. Plenty of applicants are available. Geometry and trigonometry are taken up in the class work.

The supervisor here does not believe that the all-day trade school is practicable without the shop atmosphere. He prefers technical graduates for class instructors and allows them to teach shop work.

The supervisor believes that all shops should teach apprentices, and that small shops may combine for this purpose. All work here is productive.

The next slide shows the plan of the General Electric Company's training room at West Lynn, Mass. Three courses are offered here, one electrical for technical graduates, and one for public-school boys who desire to become tradesmen.

Applicants fifteen years of age are admitted to the machinist course, and all applicants for the electrical tester's course must be eighteen or nineteen years of age and high-school graduates. Engineering graduates are also taken in a special course, and they must be at least twenty-two years of age.

At the present time approximately 400 students are enrolled, and 95 per cent of those taken graduate. Approximately 30 graduates are now holding executive positions. The machine course requires four years to complete, and a bonus of \$100 is given upon graduation, also a wage of approximately 30 cents per hour. Students are not allowed to work piece work, and 30 instructors are provided for the shop and class work instruction, 7 of whom are graduate students. All class work is conducted in the shop. Lesson sheets are used entirely. Approxi-



mately two hours a week class work is given and students are paid while attending. The technical class students do not attend class work. An indenture is used. A two-months' trial period is required, and approximately two out of every five applicants on trial are enrolled.

The machine training room contains 45,000 square feet and the pattern training room 10,000 square feet floor space. A great deal of geometric projection and conic section drawing is given.

The next slide shows a bird's eye view of the plant of the General Electric Company, of Schenectady, N. Y. To a visitor entering the mechanically equipped training room, the impression received is that discipline is thoroughly taught here and the shop atmosphere prevails.

Approximately 400 students are enrolled, and although quite a number graduate from the school, only 17 per cent pass all their examinations when they graduate. The factory will not employ a student who breaks his contract, and students who are delinquent sometimes work without pay until the supervisor thinks it advisable to take them on the course again.

All machine students work in the foundry during three months of their course. This school has been in operation about twelve years. The course requires four years to complete, and machinist students are paid 10 to 16½ cents an hour, changing every six months. A mechanically equipped training room approximately 40 by 100 feet is provided for machinist students.

Students remain in the training room about one year, and 10 instructors are provided for the class and shop work. Graduate toolmakers received 30 to 32½ cents an hour, and machinist apprentices upon graduation receive 25 to 30 cents per hour. All classes are conducted in the shop, lesson sheets are used entirely, and a circulating library is found to be very beneficial. All students receive four hours a week class work, and are paid wages for the time so spent. When a student fails to report for class, a deduction is made from his pay for this time.

The supervisor pays particular attention to the progress of the boy for one year after he has left the school and gone into the shop.

The next slide shows a class of students of the H. H. Franklin Manufacturing Company, of Syracuse, N. Y., who have a school, organized in 1910, with an enrollment at present of 30 students. The machinist trade only is taught, and requires four



years to complete, with trial periods of from three to six months. The students are paid from 10 to 22½ cents per hour, and the rate changed five times during the course. A \$100 bonus is paid upon completion.

Two instructors devote their entire time to the course and teach both shop practice and mathematics.

The school occupies 2,300 square feet of space. Students seventeen to twenty years of age are admitted, and it is claimed that the school is entirely self-supporting. All classes are held during shop hours, and students are paid wages while attending classes, which require four hours each week.

The next slide shows the building used by the Cadillac Motor Car Company, of Detroit, Mich., for the school maintained by them.

This school was organized in 1907, and at the present time has an enrollment of 150 students. The machinist trade only is taught, although many of the graduates remain in the tool room after completing the course and are allowed to work into the tool making while receiving wages of from 22 to 30 cent an hour. The course requires two years to complete, with no trial period.

The students receive from 14 to 17 cents per hour, with a bonus of \$100 upon graduation. Students work on piece work and are allowed 75 per cent of the regular rate. There are 7 persons devoting their entire time to the school, 5 of whom are first-class mechanics.

The total amount expended in training-room and class-room equipment is \$10,000, and a space of 5,600 square feet is allotted to the school.

Three classes of one hour each are given the students each week with pay for the time spent. Of all work done by the students, 99 per cent is productive. Applicants must be eighteen years of age, according to the State law, and must have had at least 5 grades of public-school work.

All classes are held during shop hours and lesson sheets are used for the instruction work. The students are given examinations twice each year, and cash prizes are awarded to those most successful.

At the last students' gathering, which was in form of an ice-cream social held in the lecture hall, \$445 was awarded in prizes for the six months' period.

The plan carried out here is to give each student approximately two weeks special instruction in the mechanical training

room previous to his going into the shop. By repeating this on each one of the 8 different machines or departments, he received sixteen weeks' experience in the training room, under the direct care of the instructor and supervisor, and is then in fairly good shape to perform the different tasks set him by the shop foremen when he takes up their work.

The instructors here see each boy at least twice a day, while in the training room or the shop, and instruct him regarding his work or lessons.

Of the 90 students graduated to date, approximately 40 are now in the employ of the Cadillac Company mostly in toolmaking and drafting room positions. About 8 of the graduates are, however, in executive positions.

This concludes the description of the shops from which information was received, and the following conclusions will give a general idea of the more important conditions.

### CONCLUSIONS

The total number of students enrolled at the present time in the 33 schools reported is 4,457.

Between 85 per cent and 90 per cent of those enrolled are taking the machinist or toolmakers' course.

The percentage of graduates appears to vary, owing principally to local conditions more than to course conditions, and runs from 14½ per cent to 95½ per cent, with an average of 53 per cent.

The majority of the courses require four years to complete, although there were 3 of two years' length, 5 of three-years' length, 1 of five-years' length, and 1 of seven years.

The wages paid upon graduating varied from 18 cents to 41 cents an hour, with an average of 28¼ cents per hour.

Of the 33 schools reported, over half gave a bonus to graduates, in the majority of cases \$100, although one company gives \$240 and another \$200, both for four-year courses.

Only 6 schools allow the students to work at piece work, and where this is allowed the rate varies from full rate to half rate.

Of the 33 schools reported, 21 have class rooms provided, and 16 of these have a mechanically equipped training room.

The age at which the students may be taken varies in different States, and in most of the eastern schools this is fourteen years or over, while the law requires all persons working on ma-

chine tools in some of the Central States to be eighteen years or over.

Lesson sheets are used for school instruction in 18 of the 33 schools, and 7 of the schools use text-books alone or with the lesson sheets.

The number of hours of class work per week varies from 1 hour to 48, with an average of  $11\frac{1}{4}$ .

The wages paid the students vary from 6 cents to 16 cents for the first-year students to  $13\frac{1}{2}$  to  $22\frac{1}{2}$  cents an hour for students in the last year of their course, with the first-year average of 10 cents per hour and a last average of 18 cents per hour.

Regarding graduates in executive positions, we find that practically all courses that has been in operation one year more than the specified time in their agreement have one or more graduates advanced to executive positions, and one firm claims that practically all executives are from their school.

The number of instructors furnished vary from 1 to every 7 students to 1 to every 175, with an average of 1 to every 45 students.

The opinion prevails that in many cases the shop foremen are not willing to pay graduates a sufficient wage, and many good men have been compelled to leave the parent company for that reason.

Most supervisors and instructors prefer the applicants to be not over sixteen years of age, and that at this age the boy is most flexible.

The majority of the instructors favor teaching algebra, trigonometry, geometry, and physics, but a few are of the opinion that the time so spent could be better used, teaching more thoroughly the more common branches.

Regarding a special course, of from one to two years, where instructions on one machine only are given, two men interviewed were emphatically in favor of this plan, whereas the majority of the rest were as strongly opposed to it.

In conclusion, we believe that the different shop conditions, the labor conditions existing in different parts of the country and the character of the applicants will compel each manufacturer to select the plan most suitable to his conditions.

For the present this committee can do little more than to gather statistics to show what plans have been adopted and what have been found most successful.

We recommend to the ensuing committee on "Manufacturing and Transportation" that the table which this committee has made, showing the shop conditions throughout the country, be made more complete as more information is gathered and more of the existing schools report their conditions.

This chart we believe to be the most practical method of placing this information before the association members and others interested, as it shows at a glance the average condition existing throughout the different schools.

In addition, further information should be obtained on existing standards of practice, lines of work and the efficiency of present methods.

A discussion of the following questions by those in attendance at the convention will undoubtedly bring out the general opinion:

1. Is a specially equipped school shop desirable?
2. Should the students be kept away from the journeymen for a part or all of their term of instruction?
3. Is an indenture or contract advisable?
4. Is a cash deposit advisable?
5. Is a bonus advisable?
6. Should the term of instruction be shortened, where special ability is shown?
7. How should the length of the term of instruction be determined?
8. How far should the shop instructors be allowed to influence the character of the work done in the shop?
9. Should the shop foremen give all the shop instructions?
10. Should the instructors in the class room work be shop-trained men?
11. What is the maximum length of time a student should work on a given operation?
12. Should piece work be given the students, and if so, how rated?
13. What proportion of the term of instruction should be devoted to class-room work?
14. Is it desirable to have one student instruct another upon a given operation?

## ENGINEERING SCHOOLS OF ELECTRICAL MANUFACTURING COMPANIES\*

DR. C. P. STEINMETZ

*General Electric Company, Schenectady, N. Y.*

[Charles Proteus Steinmetz, second vice-president of The National Association of Corporation Schools, was born in Breslau, Germany, and educated in the common schools there, later entering the University at Breslau. While in college he became a convert to socialism and wrote extensively on the subject thus arousing the enmity of the government which urged procedure against him. Just before graduation he was forced to leave the country to avoid arrest. He escaped to Zurich and entered Polytechnic where he tutored to pay expenses. He came to America in 1889 in the steerage arriving penniless. Rudolph Eickemeyer employed him as a draftsman at \$12.00 per week until in 1893 the Eickemeyer Company was merged into the General Electric Company. Since that time he has become one of the greatest electrical inventors and engineers in the country and is at present Chief Consulting Engineer of the General Electric Company. In 1902 Harvard University honored him with the degree of A.M. and the following year Union College granted him a Ph.D. He has been professor of electrical engineering at Union since 1902.]

He is the inventor or perfecter of the following electrical devices: the induction motor; single and polyphase induction motors; the compensating winding; the single phase railway motor; the mercury vapor lamp; the mercury arc rectifier.

He is the author of numerous books and pamphlets on technical subjects and has lectured extensively throughout the country not only on electrical engineering but on political and social subjects.]

The subject on which I wish to speak is the engineering schools of electrical manufacturing companies, and more particularly of the General Electric Company with which I am associated. The so-called student engineers' course was established about twenty-five years ago. It originated from the experience that in the work of an electrical manufacturing company to secure efficiency to carry out operations a theoretical knowledge is necessary. This is very difficult to acquire by practical men outside of college, and therefore advantage would appear to result from the employment of college graduates for all important positions in manufacturing companies. Experience has fully proved this. At the same time the graduate fresh from college is only the raw material. The college does not graduate electrical engineers, but men capable of becoming such, after having had the necessary practical experience, and having acquired judgment based on that experience. Now, it was realized that the testing department of a large manufacturing company is the place where such general experience in electrical engineering can be acquired more satisfactorily than anywhere else in the world. Therefore, it was considered necessary to give those college graduates which the manufacturer had to employ preliminary training in practical engineering in the testing department. Such training cannot be had in the college where the student is taught, but it must be

\* This paper was read at the first annual convention of The National Association of Corporation Schools held at Dayton, Ohio, September 16-19, 1913, and will appear in the proceedings of that convention.

education derived in the manufacturing company where the student is given facilities to learn, and where the initiative is not on the teacher, but on the pupil. In the college it is the duty of the instructor to see that the student is taught, in the manufacturing company the duty is on the student to learn. The requirement for admission to the course is graduation from a college of recognized standing or the knowledge equivalent thereto. The course as now established covers one year's work in the testing department, and we take care to give each student a chance on all three classes of testing work; testing small and medium sized machinery, testing controlling devices and appliances and testing large machines, such as big power transformers, etc. We employ from 200 to 400 students every year, an average of about 300. After one year's work, we provide positions for those students who desire to remain with the company; and for those whom we consider first-class men further training in an extension course. The two main extension courses are the commercial course and the general engineering course, which is operated under the direction of the engineering department, and covers three sections designing, laboratory and research work, and general engineering. There are a number of important problems which I feel have not been finally solved, and regarding which there is still a desirability for extensive discussion. There are six of these questions which I desire to bring before you for as free a discussion as possible, so we may have the benefit of exchanging ideas. The first is the question of shop work; that is, shop experience in the machine shop, foundry, carpenter shop, etc. Should this be given to student engineers? Shop experience in most positions is practically essential, or at least extremely desirable and useful. Even to the commercial engineer and the sales engineer in many branches practical shop experience is desirable and necessary; for instance, in the motor sales department, in the milling department, etc. In other sales departments it is less important, and in some probably unnecessary. It is therefore extremely desirable that the graduate student engineer should have shop experience. The question now arises whether such shop experience should be given in the course, and how it should be given, or whether it should be required at admission?

The very serious objection to giving shop experience in the course, which has induced us not to attempt it, is that to give reasonably efficient shop experience to the boy who has never worked in the factory requires at least six months, preferably a



year. That would extend the course to two years of nearly that. Now, while it is very beneficial to the students to devote two years to getting practical experience, at the same time it is almost impossible to make them see it in this light. You must realize when the boys come from college they have had in addition to the grade school education eight or nine years in high school and college, and when they leave college they are desirous of going to work and not continuing indefinitely educational work. The one year in the testing department they are willing to submit to, because they realize the necessity; but if the course is extended materially beyond one year there is a great deal of opposition, and it is justified sometimes by the fact that many college graduates have had more or less shop experience. They come with all kinds of shop experience, from nothing up to where the entire experience consists of the so-called shop work in the college, which very often is a joke, while in other cases it is fairly good. Some of the boys come prepared as fully as we desire to have them, and it would therefore be wasted time to put them in the factory. Others may have had a year or two of shop experience, through having worked in a factory before going to college. The college graduate does not come in a very definite state, but with all kinds of preparation, from very good to practically nothing. That makes it difficult to establish shop experience as integral part of the student engineer's course without in many cases justifying the complaint of wasting the student's time. It is not a waste of time because you can always learn some more, but it is a relative waste of time where the man wishes to make useful application of his knowledge rather than to keep on learning forever. The question, therefore, which I would like to have discussed is whether or not experience is desirable as an essential part of the course, and if not desirable, then if so should it be an essential requirement for admission. The second question is that of class work in the student's engineering school. In the apprentice course the final consensus of opinion is that some class work is necessary and essential to fill out the gaps in the previous education. The college graduate comes to us in a different state. He has had rather a surfeit of class work in the eight or nine years in high school and college, and there is some antagonism against once more going into class recitations after he has graduated and gone to work. On the other hand, there are so many new things coming up there is great benefit in class work. Working on machines, testing one class of machine, going

over the field, and an explanation of the why and wherefore, to make him understand it, may be very desirable, even if the student may not take to it very kindly. The question then is, whether it should be class work and recitation, or simply lecture work, or whether it should be education by evening lectures. Evening courses with lectures are still provided, and many avail themselves of them, and the plan has worked successfully. At the same time I have the impression where the work is done outside of the company's time with evening lectures, as a rule among college graduates there is not the response, not the same eagerness to learn as in a class of picked workmen. At present we have provided a systematic lecture course, holding one session a week, and dealing with various general subjects of importance to the graduate. No further class work is done. The question of class work recitation and lecture work within the company's time, is a subject regarding which the last word has not yet been said.

The next question is the admission of non-college trained men to the course. That is a rather serious question in my mind. It is very unfortunate that a big industry should entirely depend on the output of our colleges; and it appears unfair that a large majority of the employees should not have a chance to reach the highest position in the companies for which they work. It should be possible for anybody with necessary ambition and intelligence to reach any position regardless of whether or not he has had high school or college training. At present in the testing department about 5 per cent of the men are not college men, but, to confess the truth, they are not on equal terms with the college men, because they do not have the knowledge which allows them to keep on even terms with the college graduate, and they are not as free to choose, but are limited to certain classes of work. To make all the positions of such a company available to all men regardless of whether they have had a chance to go to college or not would require class room instruction for those without the college education.

Very closely related to this subject is the question of the continuity of the various student and apprentice courses. At present we have three such courses. There is the apprentice course, educating boys to be machinists, draftsmen, etc.; the engineer's course, starting with the college graduate and preparing him for the higher positions of engineering, as well as the electrical tester's course, organized only in our Lynn factory, where boys are taken with probably a high average education,

and where they take the lower positions in the testing department, etc. The question arises whether these courses should not be so arranged that graduation from one admits to the next higher one, or whether they should be kept permanently separate. Taking the stand that everybody should be able to reach the highest position, the conclusion would be that these three courses should be continuous. Graduation from one should admit to the next higher one, either directly or conditionally. This would necessarily require class work. On the other hand, there are a good many arguments against having such a continuity, because we must realize that while the apprentice course may graduate into a junior student course, there would be only a small minority of apprentice graduates which would avail themselves of the advanced opportunity. Now where one graduates into a higher course it causes the impression of incompleteness, which may lead to the graduates of that course feeling dissatisfied, feeling they are only on the way. Since most of them would not be able to go further it would deter men who would not be satisfied with their positions from trying to go higher. That to some extent is a disadvantage. It may, however, be questioned whether dissatisfaction is really a disadvantage, or whether, after all, the progress of the human race has not been the result of dissatisfaction. That is a question well open for discussion.

Another question concerns the size of such a school. Is it preferable to limit size to supply our own organization demands or to educate more than we can digest. Throughout these twenty odd years since our course existed we have always taken in more college graduates than we expected finally to retain, and have retained only about half, while the other half have been turned over to the industry at large. We realize that such an educational course is not financially a very profitable enterprise. It may not be a very serious loss. We all know it is very profitable in the physical out-put by making available a higher class of help and eliminating the unavoidable damage done by inexperience and recklessness, because, after all, in such a course, to make it efficient, the problem is to put the student as early as possible in a responsible position, to have him take the responsibility. In the engineering department we have always been endeavoring to consider the young engineer's position throughout the entire organization as more of a preparatory course for the industry at large, not endeavoring to keep all our young engineers permanently with the company, but rather encouraging engineers who

have been with us for a limited number of years to find better positions outside, in the industry where the experience they have gained with the manufacturing company would be extremely beneficial to them, and useful to the parent company in which they gained their experience.

The last point which I wish to raise is the difficulty of balancing the demand for the college graduate, made by the manufacturing company and the industry in general, to the supply. These are not always equal and naturally the demand for college graduates has varied with the fluctuation of business. Sometimes a large number are required, sometimes relatively few. The fluctuation of the graduate classes rather tend to be in reverse of the demand, because there is a period of industrial prosperity. Where there are positions waiting for them there is much more tendency for the young men not to go to college but simply to look at the position. But that is the time when we most need college graduates. When a time of depression comes, then it is brought home to the young man in college or the high school that he has very little chance to get a position, even after he graduates, and no chance without a diploma. The problem is always to get as many first-class men as the industries desire, and not to have the college waste first-class men by having them graduate without being able to find positions. That problem is not solved, and I think it may be advisable to have a theoretical education course controlled by the manufacturing company which may supply a part of the demand for college trained men, taught by men trained in industrial organizations, with considerable practical experience and sufficient theoretical experience to be capable of doing the work, and having that as a balance wheel to get a better proportion between supply and demand. These are the questions which I wish to raise for your consideration. The shop work in the engineering course of the college graduate; the class work recitation and lectures outside of the company's time; making the higher position with the company available to the non-technical men by giving them such education as would fit them for the higher position, relating the various apprentices' and students' courses, and how far the corporation school should supply the demand, not only of the corporation but also of the industry at large.

### **COOPERATION INVITED**

Non-members receiving copies of the bulletin are advised that their name has been sent to the Secretary's office by some friend who knows of their interest in the movement for better industrial education. There is no charge, but our Assistant Secretary would be pleased to hear from all who feel a desire to cooperate with our Association.

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### **HOTEL RESERVATIONS AND TRANSPORTATION**

Mr. E. C. Wolf, of The Curtis Publishing Company, Independence Square, Philadelphia, is Chairman of the General Committee on Hotel Reservations, Transportation, Educational Exhibits and Reception. Inquiries for information on any of these subjects should be addressed to Mr. Wolf.

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### **A COMMENDABLE UNDERTAKING**

Dr. Charles P. Steinmetz, our Second Vice-President, has accepted the Chairmanship of a Committee which will make a compilation of all the State laws relating to industrial education. This is an undertaking which will require much research work. Our Association is extremely fortunate in having a man of the ability and fitness of Dr. Steinmetz, and we are to be congratulated upon his willingness to perform this task. When Dr. Steinmetz's Committee has completed the work, a report of same will be published in the bulletin.

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### **A NEW DEPARTMENT STORE SCHOOL**

The Rike-Kumler Company, which conducts a leading department store in Dayton, Ohio, inaugurated a school on March 2d to teach courses in salesmanship to their employees. Miss Lillian Meyncke is Manager of the School.

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### **EDUCATION BASED ON INDUSTRIALISM**

In a recent editorial George Horace Lorimer wrote:

"Public Education ought to be founded squarely on modern industrial life."



### WAR TAKES TWO-THIRDS

In an article in the *Craftsman*, by its editor, Gustav Stickley, appearing last July, we are given a glance at the figures representing capital, and the human energy tied up and diverted from productive channels in maintaining armaments and standing armies in time of peace. The substance of it was:

"The annual appropriations for the army and navy, for fortifications and for pensions which are a result of the civil and Spanish wars, aggregate approximately two-thirds of all the expenditures of the Federal Government.

"This fact, indeed, was strikingly emphasized a year ago when the commission appointed by the State of Massachusetts to investigate the causes of the high cost of living published its report. The commission found that 'a most far-reaching influence in creating, fostering and perpetuating high prices in militarism, with its incidents of war and waste and its consequences in taxation.' The commissioners pointed out that in the 127 years of our national existence Uncle Sam has spent, for all purposes, something over \$21,500,000,000, of which more than \$16,500,000 was devoted to militarism and its incidentals, while less than \$5,000,000,000 was absorbed by the activities of peace."

The percentage of money expended for industrial efficiency as compared to military efficiency is so small that it has attracted the attention of far-sighted, careful thinkers of the present day. Especially is this true, as it becomes more and more apparent that commerce will be the most potent factor in future military movements. The United States, as the most wealthy nation in the world—its wealth being over 40 per cent. greater than that of Great Britain and practically as great as the combined wealth of Germany and France—therefore the United States should be and can be, the greatest of all nations in its commerce.

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### NEW (CLASS A) MEMBERS

During February the Speedwell Construction Company, of New York; The Texas Company, of New York, and the Fore River Ship Building Corporation, of Quincy, Mass., became Class A members of our Association.



## METHODS OF SELECTING MEN IN BUSINESS\*

By F. C. HENDERSCHOTT

Manager Bureau of Education of The New York Edison Company

### CONDITIONS IN INDUSTRY

Let us first turn our attention to the conditions underlying industry at the present time.

Dr. Charles W. Eliot, President Emeritus of Harvard University, in a recent address to the students of that institution, said:

"The industrial situation in this country, and, indeed, in the world at large, has not improved during the last twenty-five years. On the contrary, it has become more exasperated and more dangerous. What is the way out of the prevailing conditions of industrial warfare?"

Dr. Eliot declares that he feels sure an improved state of mind in the employing class has come about within the last five years. He continues:

"I have been studying now for a good many years the question of content in labor, and I have come to the definite conclusion that the conditions of content in labor which I have enjoyed personally are those which all laboring people ought to enjoy."

### THE EMPLOYER IS ADOPTING CORRECTIVE METHODS

A new attention has been paid to the conditions of labor under which the laborer can reasonably be expected to be contented, efficient and happy. There is a new interest in studying that problem of content, and it is becoming more and more apparent every day that the favorable conditions for a life of labor are just the same in all ranks of the community, and, indeed, in all professions, trades, and occupations. Dr. Eliot has set up a contention and stated a conclusion. First, "The industrial situation in this country and in the world at large has not improved during the last twenty-five years," but, "on the contrary, it has become more exasperated and more dangerous," and,

\* This paper was read at the first annual convention of The National Association of Corporation Schools held at Dayton, Ohio, September 16-19 1913 and will appear in the proceedings of that convention.

second, that "everyone who labors has a right to be contented and happy." But Dr. Eliot sees a ray of hope. He is certain that an improved state of mind in the employing class has come about within the last five years. It has been during this period that industrial education has been most active. Much attention has also been given to the problem of fitting the employee into the right position. These efforts have come to be known as "Vocational Work."

### THE EMPLOYEE—HIS FITNESS

There seems to be general agreement that a salesman should possess a knowledge of human nature embracing a thorough study of self; a thorough knowledge of the goods he is to sell and similar goods which will be offered by competitors; a knowledge of the fundamentals which underly and make for successful salesmanship; and an understanding of the elements which enter into the sale.

This alone is not sufficient. No man can hope to succeed to-day in industrial life who does not possess health. Temperament is also a vital consideration. The man who does not like to sell, who shrinks from meeting new types, who dislikes to measure his abilities with others, who prefers to work from a known basis, such as mathematics or chemistry, will probably fail entirely in the profession of salesmanship, or the degree of success which he will attain will be moderate.

Those possessing the temperament which include a liking for selling were at one time classified as "born-salesmen." We must presuppose that the salesman will not handicap himself by retaining or developing undesirable personal qualities. He must be honest, industrious, cheerful, courteous, determined, and must possess certain other qualities universally recognized as desirable and helpful. He should at all times cultivate self-respect as it imparts the sense of true manhood, self-reliance, dignity, courage and independence.

Intelligence also plays an important part. It is my belief that to succeed in salesmanship, one must have developed his intelligence to a larger degree than is required to attain a similar success in professions or trades which are based solely upon the science of mathematics. I hold this belief as the result of my observations in different branches of salesmanship covering a period of approximately twenty years.

## HEALTH—THE FIRST ESSENTIAL

In addressing a recent convention of the salesmen of The National Cash Register Company, Mr. Thomas J. Watson, Sales Manager of that corporation, said:

"In the employment of men keep in mind, first, health—because a man must have health to be successful in this business or any other."

When an employee completes the courses in The New York Edison Company's Commercial School with a satisfactory rating, he is granted a certificate which testifies that he

"has completed the prescribed course in *physical efficiency*, salesmanship, commercial organization and central station service."

Edward Bok, editor of the *Ladies' Home Journal*, and originator of a series of articles on our common-school system of education, recently contributed an article to the *Outlook* in which he shows the inadequacy of our entire educational system. The article is based on replies from 100 seniors of leading colleges for women and from 449 men about to be graduated from the universities of Harvard, Yale, Princeton, Wisconsin and California. This article is perhaps the most severe arraignment of our present educational system which has appeared in public print. Mr. Bok states that an investigation recently made in connection with several hundred women who had been out of college three years or more showed:

"The great lack, as expressed by 70 per cent of the women who had become wives, mothers, and housekeepers, that they felt, since assuming their mature obligations, was that the college had in no practical sense fitted them for their work as wife, mother, or homemaker. This was generally deplored, and when these collegiate alumnae were asked in what respect they would improve the modern women's college to make it more effective for the girls of the future, they almost unanimously answered that they would introduce three studies and make them co-equal with cultural studies; first, domestic science; second, personal hygiene; and, third, civics."

He continues:

"It is not by any means impossible that a canvass of the alumni of men's colleges would reveal exactly the same general approbation, but likewise equally practical suggestions for better fitting our young men for the work which they must take up in the world as citizens, fathers, and workers."

It is perfectly possible to educate a person in ways that make for health. There are well-defined laws governing exercise, hygiene, recreation, and the many elements which enter into and have a bearing on the subject of one's health.

Dr. Gullick's book, entitled "The Efficient Life," and his other book, "Mind and Work," and Dr. Woods Hutchinson's "Handbook of Health" are among the excellent textbooks on this subject.

### TEMPERAMENT

The question of temperament is very important. Temperament cannot be taught, but the many elements of mental life can be analyzed and understood, and observance of proper relations and developing the mind are conducive to an even and rational temperament. So it is perfectly possible by means of well-chosen studies to modify temperament or to develop those desirable qualities which seem weak and to minimize the undesirable qualities which sometimes gain control. The subjects upon which one reads, and the classifying of this reading so as to get proper relations, also aids materially.

It is the love of his work, however, that will sustain the salesman through the vicissitudes and trying periods with which he will be confronted. He who assumes a begging attitude jeopardizes his success. Carl H. Pierce says regarding the proper carriage of a salesman:

"Remember that you are asking no favors; that you have nothing to apologize for; and that you have every reason in the world to hold your head up high. And it is wonderful what this holding of the head will do in the way of increasing sales."

### INTELLIGENCE

Most people will resent any questioning of their intelligence, yet the word intelligence is defined in Webster's Dictionary as—

"the power or faculty of knowing, as distinguished from

the power to feel and to will; sometimes the capacity for higher forms of knowledge, as distinguished from the power to proceed and imagine; the power to perceive relationships, to judge and comprehend; the thinking faculty; the understanding."

Intelligence then is knowledge, or, perhaps, the faculty to understand and to apply knowledge. The broader the scope of such knowledge, the more intelligent must be the person possessing it. He must understand the relation of things and be able to wisely determine problems by reason of his greater understanding and ability to make application.

### METHODS OF SELECTING EMPLOYEES

One employer, writing for the *New York Sun*, makes this contention:

"In hiring people I am guided largely by their voice and manner of speech. I believe that if I could sit here in my office and not see the applicants, but only hear their voices on the other side of the partition, I could pick out by their voices alone the people I want without mistake."

This is the belief of one man. It does not promise to become widespread in its effect.

### PHRENOLOGY

There is certain groups who term themselves phrenologists and base their claims upon the teachings of one Dr. Gall. They maintain that mental faculties and traits of character are shown by the conformation of the skull, and they base their system of faculties and their localization on this hypothesis. Webster's dictionary says:

"This contention was based on the erroneous supposition that the brain exactly conforms to the shape of the skull."

Recently considerable publicity has been given to the claims of phrenologists. In a general way physicians discredit such claims. They admit that they know where the brain centers, such as speech, hearing, sight, etc., are located, but that is as far as they can go in determining the functions of the brain.

### CHARACTER ANALYSIS

Phrenology, partly discredited by a certain group, has given rise to a new school using the term "character analysis" as its basis for selecting employees. The claims made by members of this new profession are very similar to those made by phrenologists, but the means of determining an individual's ability are different. "Character Analysis" does not depend entirely upon the shape of the human skull, although this point is considered. One of the ablest exponents of this new school, in a recently published manual, proclaims:

"Every man should be in the place in the world for which he is best suited. A scientific dairyman selects animals for his herd by points. . . . The average employer selects men by chance, or at best by guess."

The author of this manual then proceeds to enumerate the many problems which must be confronted in engaging and handling employees, stating that the inefficiency of methods now in use leads to discontent and dissatisfaction. She says:

"The result is that some of our greatest industrial and commercial institutions are exceedingly uneven, the bad effects of the best men diluted—neutralized by the harm done by the misfits. Even in the best plants the efficiency could be greatly increased if every position were filled by the best men. Hence the need for a scientific method of selecting, placing and testing men."

The author of this new plan states that such a method has been devised. It is founded on modern research, experiments and demonstrations of scientific principles, which have been tested and verified by more than 12,000 actual analyses of individuals. The plan is not very definite. It is based on an observation of certain characteristics in the individual—whether he is blond or brunette—amount of knowledge he possesses of men—the answers he gives to questions asked—etc. The observer or employer sums his man up through his knowledge of human nature in general and his observations of the applicant's physique. Among the instructions given to employers we find this:

"After a pleasing greeting, the applicant should be given a chair so placed that the light will fall directly upon his face—not such strong light as to be uncomfortable for



him, but enough to bring out the color, lines and expressions. The examiner's face should be turned from the light.

In placing the blank before him, you should stand, preferably, at his right side and a little behind him. With the point of your pencil indicate to him which questions he is to answer. While you are doing this you have an opportunity to look directly down at the top of his head, to observe his backhead, neck and other features which, as will later develop, are all-important."

Medical science does not absolutely refute this new effort to determine character. One of the leading brain specialists of New York, in discussing this subject, recently said:

"Medical science in attempting to analyze character does take into consideration the general shape of the head. Yet we find this is not an infallible guide. Character is determined not only by the physical, but by observation of the characteristics of a person, speech, walk, movements in general and peculiarities. Temperament must be carefully considered."

It is my opinion that a better character analysis can be given by utter disregard of the shape of the head beyond its general measurements than by any attempt to read character through specific enlargements or defects of the skull.

One of our leading American psychologists when asked recently if psychologists believed character could be analyzed by the processes used by character analysts repudiated the entire scheme as having no value, and stated that his belief in regard to this matter was concurred in by psychologists as a whole. Yet one author, William Walker Atkinson, who styles himself a psychologist, in his recent book, "The Psychology of Salesmanship," quotes Professor Fowler, the noted American phrenologist, and recommends some of his teachings.

#### DR. SCHNEIDER'S SYSTEM

Dr. Herman Schneider, well known for his aggressive work along vocational and industrial educational lines, writes of his experience, covering a period of about seven years, in the handling of approximately five hundred students. The conclusion of Dr. Schneider rather upsets the theories of phrenologists or

character analysts. I quote from a recent article written by him, "Selecting Young Men for Particular Jobs":

"Several years ago two young men appeared at my office to apply for admission to the co-operative course. Although they came together, they were not mutually acquainted, one being from Kansas and the other from Ohio. They were of the same physical build; they had the same facial characteristics; their scholarship records were equally good, and both said they felt an impulse toward mechanical engineering. Both looked like good material. The conversation disclosed no radical or even slight differences in their personalities. They gave promise of being a good 'pair,' and consequently were sent to the same machine shop.

In due process of events, a co-ordinator from the engineering college called at the machine shop. The foreman said Kansas was satisfactory, but Ohio didn't get into the work. Each time the co-ordinator called, the foreman reported Kansas as most satisfactory and Ohio as more and more unsatisfactory. In a month Kansas was turning out his work with the ease, sureness and dexterity of an old hand, while Ohio was getting a case of nerves, spoiling work and developing fatigue. The superintendent asked us to try Ohio elsewhere, but we decided for a number of reasons to continue him in the shop a little longer.

In the university, however, Kansas was soon reported to my office as utterly hopeless. His scholastic grades were almost zero in all his subjects. He gave no reactions at all in class and laboratory work. His teachers said he was stupid. But Ohio came to his school work with avidity. He was mentally keen and seemed to delight in his work.

Kansas grew nervous over his school work, Ohio thrived on it. Kansas at school was tired out at 10.30 each morning; Ohio got better as the hours went by. Kansas longed for the rest which shop work gave him; Ohio longed for the rest which school work gave him.

Careful tests and conference showed conclusively that Kansas broke under mental work, mental responsibility and self-directed and diversified manual work; but that he expanded in spirit, health and satisfaction under repetitive shop processes which were planned for him. Similar tests and conference showed that Ohio broke under the

strain of directed repetitive processes, and to a lesser degree under self-directed and diversified manual work; but that he thrived when given mental problems and responsibility.

We have lost track of Kansas, but Ohio is happy and successful in commercial life.

The problem then is to state the broad characteristics, to devise a rational method to discover these characteristics (or talents) in individuals, to classify the types of jobs by the talents they require and to guide the youth with certain talents into the type of job which requires those talents. This is a big problem, but one possible of measurable solution, or, at worst, possible of a solution immeasurably superior to our present haphazard methods."

Surely the new theory or science termed "Character Analysis" does not have sufficient standing to be seriously considered as a basis for determining the characteristics or ability of individuals. It is my opinion that at the present time psychology furnishes the only basis for the selecting and training of salesmen that can be seriously considered.

In studying the vocational movement, we must not overlook hereditary tendencies. As a rule, occupations which occupied the attention of ancestors for many generations back appear to influence present generations, although this rule is not infallible, and sometimes appears to have no effect at all for a generation or two, only to become apparent again in a later generation. For example, foreigners coming to America are very apt to turn to the same occupations here in which their ancestry were engaged in the old country.

Dr. Schneider emphasized this point. I quote what he has written:

"While the classification given has been found empirical, the working of the principle of evolution is at once evident. Every distinct person possesses certain characteristics, the result of the thousands and thousands of years of conditions peculiar to it. Thus the Chinese are settled, the Arabs are roving, the Sicilians are impulsive, the Hindoos are deliberate, the Japanese are manually accurate, the Persians possess a refined color sense. If a nation has been a roving nation for several thousand years, and then a settled nation for several thousand years, some of its present-day representatives will be roving and some settled."

According to Dr. Schneider's system no effort is made to predetermine what occupation the applicant is best fitted for, but it has been his experience that marked characteristics will in time stand out. These characteristics have been classified, and they now constitute a sort of guide under Dr. Schneider's system in helping students to "find" themselves. This list of characteristics is not considered as final, and Dr. Schneider believes that future experience will modify it, "but," he states, "it does furnish a rational basis of broad selection."

#### PSYCHOLOGY AS A BASIS FOR SELECTION

As Professor Munsterberg states in his book which I have quoted, it is only in the last ten years that systematic efforts have been made to apply the experimental results of psychology to the needs of society, and perhaps for even a lesser time have these efforts been applied to vocational subjects and to salesmanship.

Professor Atkinson, in his book "The Psychology of Salesmanship," sounds a note of encouragement. He states unequivocally that both character and personality may be altered, changed and improved, but before this can be done there must be desire on the part of the student for such improvement.

Professor Payot, the eminent French psychologist, contends:

"There must be some desire for improvement. The strength of desire is not material, but unless some faint desire exists nothing can be done."

Professor Munsterberg reminds us that there are gifted and ungifted; intelligent and stupid; sensitive and obtuse; quick and slow; energetic and weak individuals.

Professor Irving E. Vining, formerly a Professor of Psychology in Columbia University, who has had extensive experience, furnished the following chart as a suggestive basis for vocational developments:

#### SUGGESTIVE BASIS FOR VOCATIONAL DEVELOPMENTS

##### THREE-FOLD ASPECTS OF THE VOCATIONAL SYSTEM

##### I—POSITIONS TO BE FILLED—

I. An investigation of the various departments and positions in commercial, industrial and professional institutions and organization.

2. A suggestive outline of the personal qualifications and the training best suited to the demands of each department by expert managers and successful representatives in the various fields of endeavor.

II—THE MAN—His ability to fulfill the requirements of the position—

1. An investigation of the types, tendencies and natural qualifications of men.

2. An appreciation of the mental, moral, social and physical qualifications of individual men and their adaptability to meet all demands.

III—THE MEANS—Institutional training and guidance—fitting the man to the position—

1. A survey of existing vocational institutions.

2. The planning and establishment of highly efficient vocational systems and institutions.

*VOCATIONAL IDEA*

Position to  
be filled

Means of fitting  
man to position.

Man to fill  
position.

Hugo Munsterburg and Walter Dill Scott have written books on psychology and selling which are quite generally accepted in industry. In the introduction to his book, "Psychology and Industrial Efficiency," Professor Munsterberg says:

"Our aim is to sketch the outlines of a new science which is to intermediate between the modern laboratory psychology and the problems of economics; the psychological experiment is systematically to be placed at the service of commerce and industry. So far we have only scattered beginnings of the new doctrine, only tentative efforts and disconnected attempts which have started sometimes in economic, and sometimes in psychological quarters. The time when an exact psychology of business life will be presented as a closed and perfected system lies very far distant."

Professor Scott, in his book "Influencing Men in Business," points out that every salesman has a choice of two methods—"argumentation or suggestion"—and proceeds to prove the superiority of each method under certain conditions.

In psychology we at least have something definite as a plan, but as Professor Munsterberg has said the time when an exact psychology of business life will be presented as a closed and perfected system lies very far distant.

### EDUCATIONAL COURSES

What, then, is available for present use?

In framing a course for schools whose purpose is to educate students or employees along industrial lines, it would seem desirable that the scope should be broad. According to the United States Bureau of Education, of the 14,749,403 males of over thirty years in the United States, only 325,613 had a college or higher education, or about 2 per cent, and only 657,432, or about 4 per cent, had regular high school training. In "Who's Who in America" there are named about 11,000 individuals over the age of thirty years who have achieved honor and distinction. Of this exceptional group, 1,627 had high-school training and 7,709 had college training, of whom 6,129 were graduates. About 73 per cent of this distinguished 11,000 received college training and about 80 per cent were graduates of high schools.

### THE SCHOOL LIBRARY

It will, however, not always be possible to include general education in the industrial school curriculum, but it is always possible to gather a carefully selected school library and encourage employees and students to familiarize themselves with the contents of the books. It has been estimated that not over one hundred volumes are necessary to fully equip a company school library and that four hours of reading per week for one year will enable any employee to read all the volumes in the library, and a little additional time will enable him to familiarize himself in a general way with the entire history of civilization.

### FURTHER STUDY

First he should study the earliest records, then classify his study under the divisions of religion, government, war, art, industry, law, philosophy and discovery, selecting such authors as are considered authorities on the various divisions enumerated. Thus the study can be brought down to the present time in proper chronological arrangement.



## THE COMPANY SCHOOL

It is admitted that industrial education will not produce an equal degree of efficiency among all employees. The ratio will probably not materially differ from that found in the older established institutions of learning. The company school, however, has been sufficiently tried as a method of increasing efficiency to warrant its continuance as an industrial factor.

Granting that we cannot raise every employee to the highest plane of individual efficiency, the fact remains that all or nearly all can be helped and improved. Seventy-five per cent of all our business literature has been published during the past five years. These figures astonish us. But the publishers of the "Standard Encyclopedia" have recently affirmed that 20 per cent of all human progress has been made during the past twenty-five years, and statisticians tell us more wealth has been created in the past fifty years than in all the preceding centuries since Christ. The same factors which have contributed to this wonderful progress of our time, more fully understood and better applied will enable industry to reach a more scientific basis of operation, will eliminate waste and correspondingly increase production with less friction, less labor and more content and happiness.

In my judgment many of those who have essayed to write on the subject of salesmanship are ignorant of the underlying fundamentals of the subject. I recently received a very handsome and substantial little booklet published by the advertising manager of one of our national weeklies. This booklet contained two articles on salesmanship which had been written and published in this magazine. I quote from the booklet:

"Then what regard shall we have for the average man's vanity when we approach him? I am ashamed to tell you where I discovered the answer to this. A good many years ago, a friend who knows the underworld pretty well introduced me to some of its more or less celebrated characters. One of them, a confidence man, explained to me: 'It's all a mistake to salve a man where you're trying to get him hooked. You want to act like you don't think he's got the brain or the coin to go through on your propositions. Put it up to him so he'll have to hook himself in order to show that your opinion of him ain't high enough.'

The proper application to salesmanship of our confidence man's theory of approach dawned upon me at last: Ask an inoffensive question. Make that question almost the first speech in your approach. Suppose you are selling saws. If they are high-priced saws, ask this question the instant you can get your man to look you in the eye: 'Have you an organization that can sell a very high-grade saw?' There is no possible answer he can make which will put you on the defensive until he yields you his attention and invites you to talk, which is what you are there for."

According to my understanding of the subject there has been entirely too much effort to incorporate the confidence man's methods into selling formulas.

Some schools, essaying to teach salesmanship, are endeavoring to maintain the contention that it is a science, but as it is admitted that the only basis for salesmanship at the present time is psychology, and since psychology is at this time an undeveloped science, or at its best a partially developed science, the inevitable conclusion is that salesmanship is not and cannot at this time be considered a definite science.

#### WHAT IS SALESMANSHIP?

What is salesmanship? The newer and better conception does not countenance the methods of the confidence man nor is it considered good salesmanship by many sales managers to dispose of goods which will not result to the ultimate advantage of the purchaser. Many formulas have been published by which we are advised goods can be successfully sold, but the salesman who has succeeded knows that there is no formula that can be successfully adapted to the various lines or fields of activity falling under this classification. There is agreement that a salesman must make a favorable approach; he must secure and hold the attention of his prospective customer; he must interest his prospect; he must convince his prospect. In this respect salesmanship does not differ from the profession of medicine, or the ministry, or law, or any other profession. The minister must do the same thing, he must sell his sermons; he must please his audiences; he must possess the proper temperament; the proper personality, etc. It is so with the lawyer. He must make the proper impression upon the jury; he must sell his case to the jury. It is so with the doctor. He must inspire the confidence of his patient.

There is probably no more known about medicine or theology or equity than is known about salesmanship. They are all professions. They should not be classed as sciences.

The salesman must understand human nature, and as human nature depends entirely upon psychological processes, it is bound up with the activities of the mind. The study of human nature is the study of the minds of the people, but successful salesmanship goes farther, it is also a study of the requirements of a community—the requirements of industry. It is a study of possibilities for business through creative work. For example: A salesman representing a house which deals in windmills visits a town in a farming section where much stock is raised. He finds that practically all the water to supply the stock is pumped from wells by hand. Here is an opportunity through proper creative effort to educate the farmers to the value of windmills for the purpose of pumping water, and by helping to educate the farmers to a realization of this advantage, the salesman helps to market his windmills through the local dealer.

The profession of salesmanship is too broad to be classified or condensed into a formula. At the present time effort is being made to compile text books on the subjects of salesmanship which will be suitable for use in company schools. A vast amount of data has appeared upon the subject which is being correlated and placed in proper form to serve a useful purpose. There is no doubt but what in time the essentials of salesmanship will be well defined and classified. In the meantime the company school is providing a way to teach the basic knowledge along general lines on which the profession of salesmanship will be built. The salesman is no longer left to educate himself, hit or miss. Knowledge which he would never have sought is being brought to him through the company school, and, finally, industry is finding that the employee so trained to know and sell its products is able not only to "get business" in the old sense of the word, but to build up a character for his company by the service which he renders.

### **WHY GERMANY IS PROSPEROUS**

Fifteen years ago Germany ranked fourth among the commercial powers of the world, giving precedence to England, France and the United States. To-day France has dropped to fourth place. Germany, outstripping both France and the United States, has risen to second place, England still holding its supremacy, but by a narrow margin.

Count Posadowsky, the Imperial Minister of the Interior, speaking in the Reichstag on February 6th, explaining the cause of Germany's prosperity, said:

"If Germany has just experienced a vast industrial expansion equaled by no other country in the world during the same time, it is chiefly due to the efficiency of its workers."

And what has made the German worker efficient? Perhaps the greatest single element has been industrial education. Education of the right sort. We owe to Germany the plan for continuation schools and we owe to Germany the idea of the vocational school.

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### **FEW SUFFER FROM OVERWORK**

Dr. Charles L. Dana, the neurologist, told the members of the Schoolmasters' Association recently he could answer with much authority the much-discussed question, "Is the American schoolboy overworked and likely to break down because of the tasks imposed on him by the present methods?"

"Overworked!" he said. "Why, he isn't even educated. In the course of thirty years' practice I can remember only one boy who suffered because of overwork, and he had weak eyes. That, in fact, was his principal complaint. I don't know any group of human beings, unless they are the college students, who find themselves less overtaxed."

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### **A SCHOOL FOR MERCHANTS**

The University of Minnesota has begun a course for retail merchants. This course springs from a belief that in the study which has been given to various phases of our economic and commercial life distribution has not received its just share of attention.

### **EXECUTIVE COMMITTEE MEETS**

On Thursday, February 26th, the Executive Committee held a meeting in New York City.

The Treasurer's report showed \$3,910.49 in cash on hand.

June 9th, 10th, 11th and 12th were decided upon as the dates for the second annual convention, which will be held in the new auditorium of The Curtis Publishing Company at Philadelphia.

One thousand copies of the proceedings of the first annual convention held at Dayton last September will be printed and copies will be sold to Class A members at cost and to non-members at the price of \$2.50 plus postal or express charges. All members will get one copy without charge.

Mr. R. H. Grant, of The National Cash Register Company, was elected to the Executive Committee to fill the unexpired term of Mr. J. E. Rogers, resigned.

Mr. E. C. Wolf of The Curtis Publishing Company, was appointed Chairman of a Committee on Reception, Educational Exhibits, Reservations and Transportation, with authority to select the other members of his Committee.

Mr. James A. Roosevelt was appointed to the Committee on Allied Institutions.

Dr. C. P. Steinmetz was appointed Chairman of a Committee to make a compilation of all the State laws relating to industrial education. Dr. Steinmetz was empowered to select the other members of his Committee, and when their report has been completed it will appear in one of the issues of this bulletin.

A copy of a tentative program for the second annual convention was submitted by the General Educational Committee and after general discussion it was, upon motion, unanimously decided that all sessions of the convention be joint sessions, and that two of the twelve periods as arranged for the four days of the convention be given over to recreation and entertainment.

The plan of the General Educational Committee to prepare reports of the various classifications of the Association's work and to have the speakers confined principally to members of our own organization was unanimously approved.

An invitation was presented from the Panama-Pacific Exposition inviting us to hold our 1915 convention in San Francisco.

The invitation was placed on file for further consideration at a later date.

The Secretary's office submitted correspondence covering negotiations with Dr. Walter Dill Scott, of the Department of Psychology of Northwestern University, which embraced a proposition for all Class A members of our Association to submit their employment plans to Dr. Scott. The following quotation is taken from Dr. Scott's correspondence:

"The selecting of men is one of the important functions in business and yet one that has not received much scientific attention. I feel sure the time is ripe for action for two reasons. The psychologists have during the last few years made distinct advance in Mental Tests. My proposal is this: You get from your Class A members data as to their methods of selecting men. Any statements as to actual experience and as to principles or methods will be very valuable. I would make a study of the data and would have some of the men from our school of Commerce go over them with me. We would try to criticise them constructively. Perhaps we could make some suggestions that would be worth while. We would try to indicate the good points used and thus be of assistance to all the members of the organization."

Among the new Class A members received during the past few days is the Fore River Ship Bulding Corporation, which has one of the best apprentice schools of the present period; The Otis Elevator Company; Messrs. Bing and Bing, the large apartment-house builders and operators of New York City, and the Texas Company, formerly a subsidiary of the Standard Oil Company.

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#### **OUR SECOND ANNUAL CONVENTION**

All of the sub-committees of the General Educational Committee are extremely active in the preparation of reports and data, which will be submitted for consideration at our second annual convention in Philadelphia during the second week in June. Every indication at this time is that this meeting will be a memorable affair.